

FINAL



May 28, 2008

**Idaho Department of Environmental Quality
Annual Ambient Air Quality Monitoring Network Review**

**Idaho Department of Environmental Quality
Air Quality Division
1410 North Hilton
Boise, Idaho 83706**

Introduction

The Clean Air Act passed by Congress in 1970 authorized the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for pollutants that threaten human health and welfare. Primary standards were set accordingly to safeguard public health and create a protective margin of safety for sensitive populations such as children, the elderly, and those with medical conditions that might be aggravated by these pollutants. Secondary standards were developed as well to protect the environment in which we live such as visibility and damage to agricultural crops, vegetation, buildings, etc.

The following seven pollutants, referred to as criteria pollutants, currently have a NAAQS: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM_{2.5}), and lead (Pb).

The primary goal of the annual network review is to determine whether the state monitoring network is achieving its monitoring objectives and to identify any needed modifications. An effective network collects adequate, representative, and useful data. The air quality data collected by the Idaho Department of Environmental Quality's (DEQ) monitoring network is used for a the following purposes: determining compliance with the NAAQS, locating maximum pollutant concentrations, providing air quality index (AQI) forecasts, determination of the effects of air pollution on public health, tracking the progress of State Implementation Plans (SIPs), supporting dispersion models, reconciling emissions inventories, developing responsible and cost-effective pollution control strategies, and establishing air quality trends.

Stability in air monitoring networks is a positive attribute, as considerable lengths of time are required to establish air quality trends. Divesting in certain monitors is needed when additional data no longer adds to its interpretation. Also, the single-pollutant monitoring approach is no longer an optimal design due to recent air quality management trends, integrating the relationships of ozone, fine particulate matter, air toxics and regional haze. Providing air quality information to the public is also becoming a national monitoring priority.

This document identifies modifications to the DEQ ambient air monitoring network since the 2007 annual network review was completed and provides plans and proposals for modifications to the network for the upcoming year (Idaho SFY 2008 – July 1, 2008 through June 30, 2009).

EPA issued updated regulations in late 2006 for state and local agencies regarding the annual network review. This document provides as many of the following new requirements possible:

- (1) The Air Quality System (AQS) site identification number.
- (2) The location, including street address and geographical coordinates.
- (3) The sampling and analysis method(s) for each measured parameter.
- (4) The operating schedules for each monitor.
- (5) Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.
- (6) The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.

- (7) The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} NAAQS as described in §58.30.
- (8) The MSA, CBSA, CSA or other area represented by the monitor.

Network Changes Made since the 2007 Network Review

The following network modifications have been made since the 2007 DEQ Network Review:

1. Boise Mountain View PM₁₀ Hi-vol (16-001-0011) was terminated 11/20/07- EPA provided approval of stoppage.
2. Pocatello G&G PM₁₀ TEOM (16-005-0015) was terminated 12/31/07 - monitor has been down due to major machine malfunction, equipment is no longer supported by the manufacturer, and cost of shipping and repair would be too high. Monitoring will be reinstated in 2008 when a replacement monitor is purchased.
3. Parma PM_{2.5} TEOM (16-027-0008) was terminated 2/12/08. This monitor was part of a special study.
4. NNU precision PM_{2.5} FRM (16-027-0004) was terminated 12/26/07 - a new precision monitor was established in Pinehurst.
5. Pinehurst precision PM_{2.5} FRM (16-079-0017) began sampling 12/02/07 at a 1:6 frequency.
6. Boise Mountain View PM_{2.5} FRM (16-001-0011) sampling frequency was changed to 1:3 from 1:6 on 1/03/07.
7. Franklin PM_{2.5} FRM (16-041-0001) sampling frequency was changed to 1:3 from 1:1 on 7/01/07.
8. NNU primary PM_{2.5} FRM (16-027-0004) sampling frequency was changed to 1:1 from 1:3 on 4/27/07 and back to 1:3 on 4/06/08.
9. Pinehurst primary PM_{2.5} FRM (16-079-0017) sampling frequency was changed to 1:1 from 1:3 on 2/23/08.
10. Pinehurst precision PM_{2.5} FRM (16-079-0017) sampling frequency was changed to 1:12 from 1:6 on 4/06/08.
11. Salmon PM_{2.5} FRM (16-059-0004) sampling frequency was changed to 1:3 from 1:6 on 4/06/08.
12. St. Maries PM_{2.5} FRM (16-009-0010) sampling frequency was changed to 1:3 from 1:6 on 1/01/07. I think St. Maries has always been 1:3. It should be now.
13. ITD NO₂ (16-001-0019) was added to this O₃ site on 7/01/07. Just like the O₃ monitor, the NO₂ sampler will run through the ozone season (May 1 - September 30) only.
14. St. Luke's PM_{2.5} FRM (16-001-0010) was switched from a manual to a sequential on 10/19/07.
15. St. Luke's NO₂ (16-001-0010) was added to this O₃ site on 7/01/07. This NO₂ monitor will run year-round, as will the O₃ monitor.
16. McCall PM_{2.5} TEOM (16-085-0001) began running year-round on 11/15/07 rather than only during smoke season (summer/fall).
17. Conversion of many monitors from dial-up telemetry to IP technology.

Network Changes Proposed in this Document

The following DEQ ambient air monitoring network changes are being proposed in this 2008 Network Review:

1. St. Luke's meteorological tower (16-001-0010) installation to be completed - currently, power and communication issues exist.
2. Purple Sage meteorological tower installation to be completed - currently, power and communication issues exist.
3. St. Luke's monitors for PM_{10-2.5}, SO₂, CO, and NO_y (16-001-0010) will be installed - projected completion date is 7/01/08 (See attached NCORE Worksheet).
4. Purple Sage O₃ monitor to be installed - this monitor will run during ozone season only.
5. Purple Sage NO₂ monitor to be installed - this monitor will run during ozone season only.
6. Idaho City PM_{2.5} TEOM (16-015-0001) to be run year-round rather than during smoke season (summer/fall) only.
7. Garden Valley PM_{2.5} TEOM (16-085-0002) to be run during smoke season (summer/fall) only.
8. Franklin PM_{2.5} TEOM will be added the network and collocated with the Franklin PM_{2.5} FRM (16-041-0001).
9. Ketchum PM_{2.5} TEOM will be added to the network for population exposure. This will be a special purpose monitor (SPM).
10. Data Acquisition System (DAS) equipment replacement.
11. PM_{2.5} FRM and TEOM equipment replacement.
12. PM₁₀ TEOM equipment replacement.
13. Continued conversion of monitors from dial-up telemetry to IP technology, as needed.

I. 2007 DEQ AIR MONITORING NETWORK OVERVIEW

I.A PM₁₀ Monitoring Network

Six PM₁₀ monitoring sites remain in operation. These monitors support local SIPs and/or PM₁₀ maintenance plans and will continue operation through 2008. Table 1 summarizes the PM₁₀ network and NAAQS compliance for each station in 2007. The addresses and method codes for the monitors in Table 1 are located in Table 2.

Table 1. DEQ PM₁₀ Monitoring Network / 2007 NAAQS Data

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	4 Highest 24-Hr Values in µg/m ³ (NAAQS = 150 µg/m ³)
Sandpoint	Bonner 160170004 +48.270633/ -116.567724		Continuous	Population exposure	TEOM (SLAMS*)	53/48/41/41
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population exposure	TEOM (SLAMS)	85/49/46/44
Nampa	Canyon 160270002 +43.580310/ -116.562676	Boise City	Continuous	Population exposure	TEOM (SPM)	175/82/79/71
Boise	Ada 160010009 +43.618889/ -116.213611	Boise City	Continuous	Population exposure	TEOM (SLAMS)	88/79/77/69
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:3	Population exposure	Primary Hi-vol (SLAMS)	51/51/45/44
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:12	Precision/Quality Assurance	Collocated Hi-vol (SLAMS)	56/48/44/40

* SLAMS = State and Local Air Monitoring Station = designations are given to those monitors that are federally required or have long-term monitoring objectives (NAAQS compliance, trends, etc.)

Table 2. DEQ PM₁₀ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Sandpoint	1601 Ontario St. Sandpoint ,ID 83864	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Pinehurst	106 Church St. Pinehurst, ID 83850	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Nampa	Northwest Nazarene University	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Boise	16 Front, Boise, ID 83702	079 - TEOM gravimetric analysis, instrumental - R&P SA246B-inlet
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	063 - Graseby Anderson/GMW Model 1200 High-Volume Air Sampler, Gravimetric
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	063 - Graseby Anderson/GMW Model 1200 High-Volume Air Sampler, Gravimetric

I.B Carbon Monoxide Network

Monitoring for CO in the Treasure Valley began in 1977. Violations of the health-based standard for CO occurred every winter from 1977 until 1986. As a result of these high levels of CO, northern Ada County was designated a CO nonattainment area by EPA. To address northern Ada County's nonattainment classification, DEQ developed a CO air quality improvement plan that included a commitment to continue monitoring CO levels (Tables 3 and 4) and assurances that existing measures to control CO emissions, such as the vehicle emissions testing program in Ada County, will remain in effect. The plan also includes contingency measures that will be enacted if levels reach specified conditions.

The Northern Ada County CO Limited Maintenance plan was approved by EPA in December 2002, reclassifying the area as attainment. No exceedances of CO NAAQS have occurred since 1991.

Table 3. DEQ CO Monitoring Network / NAAQS Data

						NAAQS 1-hr = 35 ppm		
						1 st /2 nd High		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	2005	2006	2007
East- man	Ada 160010014 +43.616379/ -116.203817	MSA: Boise City	Contin- uous	Population Exposure	SLAMS	5.3/ 4.6	4.8/ 3.5	4.6/ 4.3
						NAAQS 8-hr = 9 ppm		
						1 st /2 nd High		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	2005	2006	2007
East- man	Ada 160010014 +43.616379/ -116.203817	MSA: Boise City	Contin- uous	Population Exposure	SLAMS	2.5/ 2.2	2.1/ 2.1	1.7/ 1.6

Table 4. DEQ CO Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Eastman	166 N. 9 th , Boise, ID 83702	054 - TECO, instrumental, non-dispersive infrared, Model 48C

I.C Sulfur Dioxide Network

Two SO₂ monitors currently operate in Idaho (Table 5). The Pocatello STP SLAMS monitor is a maximum concentration site, to assess impacts of local industrial emissions. The 5-Mile Soda Springs SPM monitor is also a maximum concentration site for assessing industrial impacts from a nearby source. DEQ intends to continue operating these two SO₂ monitors.

Table 5. DEQ SO₂ Monitoring Network / NAAQS Data

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequ- ency	Monitor Objective	Monitor Desig- nation	NAAQS 24-hr = 0.14 ppm		
						2005	2006	2007
						1 st High/2 nd High		
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Poca- tello	Contin- uous	Highest Concen- tration	SLAMS	0.026/ 0.023	0.027/ 0.024	0.026/ 0.024
5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Contin- uous	Source Oriented	SPM*	0.047/ 0.043	0.033/ 0.024	0.090/ 0.005
						NAAQS 3-hr = 0.50 ppm (secondary std)		
						2005	2006	2007
						1 st High/2 nd High		
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Poca- tello	Continu- ous	Highest Concen- tration	SLAMS	0.066/ 0.059	0.064/ 0.061	0.052/ 0.051
5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Continu- ous	Source Oriented	SPM	0.116/ 0.106	0.107/ 0.090	0.107/ 0.090

* SPM = Special Purpose Monitor = designations given to monitors intended for short-term investigations or discretionary State monitoring programs (hot-spots, smoke management, etc.) SPM monitors are often re-designated SLAMS if the data reveal the need for long-term monitoring.

Table 6. DEQ SO₂ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
STP	Batiste Chubbuck Rd, Pocatello, ID 83204	100 - Teledyne Advanced Pollution Instrumentation, Model 100A
5-Mile Soda Springs	5-Mile Rd., Soda Springs, ID 83276	060 - Thermo Environmental Inst. 43C, pulsed fluorescence

I.D Ozone Network

DEQ is currently operating four ozone-monitoring stations; three in Boise and one at the Lancaster site in northern Idaho (Tables 7 and 8). In Boise, the Whitney Elementary School site is the required maximum population-density monitor and the ITD site was selected as the maximum concentration site based on a 2004 saturation study. Lancaster is located 30-miles east of the city of Spokane, where EPA AIRNOW maps frequently show “moderate” air quality.

Table 7. DEQ O₃ Monitoring Network / NAAQS Data

				NAAQS = 0.08 ppm daily 8-hour max		Max Daily 8-Hr Avg, 4 th Highest $\mu\text{g}/\text{m}^3$		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Freq- uency	Monitor Objective	Monitor Desig- nation	2005	2006	2007
Boise Whitney	Ada 160010030 +43.589464/ -116.223462	MSA Boise City	Contin- uous	Population Exposure	SLAMS	0.075	0.082	0.078
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Contin- uous	Population Exposure	SPM	0.066	0.068	0.067
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	MSA Boise City	Contin- uous	Population Exposure	Proposed NCORE			0.068
Boise ITD	Ada 160010019 +43.634585/ -116.233919	MSA Boise City	Contin- uous	Population Exposure/Maximum Concentration	SPM		0.074	0.080

Table 8. DEQ O₃ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Boise Whitney	Whitney Elementary School, Boise, ID 83705	087 - Teledyne Advanced Pollution Inst., Model 400A
Lancaster	N. of Lancaster Rd. Hayden, ID 83666	087 - Teledyne Advanced Pollution Inst., Model 400E
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	087 - Teledyne Advanced Pollution Inst., Model 400E
Boise ITD	311 W. State St. Boise, ID 83703	087 - Teledyne Advanced Pollution Inst., Model 400E

I.E Nitrogen Dioxide (NO₂) Network

DEQ operates three NO₂ monitoring sites; two seasonal sites at Lancaster and ITD and a year-round location at the proposed NCORE site at St. Luke's (Tables 9 and 10). All three are collocated with O₃ monitors and this summer the St. Luke's site will also have the capability to monitor NO, NO₂, total NO_x, and NO_y. An additional ozone-season NO₂ monitor will be added to the network at the Purple Sage site in Caldwell. This will be collocated with an O₃ monitor and meteorological tower upwind of Boise. In addition to NO₂ NAAQS compliance, the objective (s) of these monitors is to assess the role of NO_x compounds in ozone production.

Table 9. DEQ NO₂ Monitoring Network / NAAQS Data Assessment

				NAAQS = 0.053 ppm Annual Arithmetic Mean		Annual Arithmetic Mean		
Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Freq- uency	Monitor Objective	Monitor Desig- nation	2005	2006	2007
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Contin- uous	Population Exposure	SPM - O ₃	0.007	0.006	0.006
Boise ITD	Ada 160010019 +43.634585/ -116.233919	MSA Boise City	Contin- uous	Population Exposure	SPM - O ₃			0.004
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	MSA Boise City	Contin- uous	Population Exposure	Proposed NCORE			0.003

Table 10. DEQ NO₂ Monitoring Network / Addresses and Method Codes

Site	Address	Method Code
Lancaster	N. of Lancaster Rd. Hayden, ID 83666	082 - Advanced Instrumentation, Model 200, Instrumental Chemiluminescence
Boise ITD	311 W. State St. Boise, ID 83703	099 - Teledyne API, Model 200E
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	099 - Teledyne API, Model 200E

I.F PM_{2.5} Network

DEQ monitors PM_{2.5} year-round at the 16 sites listed in Tables 11 and 12, using 24 different samplers. The PM_{2.5} TEOMs support DEQ's air quality forecasting and smoke management programs, while the filter-based monitors provide NAAQS compliance data. Federal Reference Monitors are operated in Franklin, Salmon, Nampa, Boise, St. Maries and Pinehurst. These sites comprise DEQ's "core" PM_{2.5} NAAQS compliance network and as such are all designated as SLAMS.

Table 11. DEQ PM_{2.5} Monitoring Stations

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:3	Population Exposure	Speciation (STN)	SLAMS/ NCORE
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:6	Population Exposure	Sequential FRM	SLAMS/ NCORE
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	TEOM	SLAMS/ NCORE
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:3	Population Exposure	Sequential FRM	SLAMS
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	Continuous	Population Exposure	TEOM	SPM - AQI
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population Exposure	TEOM	SPM – AQI
St. Maries	Benewah 160090010 +47.316667/ -116.570280		1:3	Population Exposure	Sequential FRM	SLAMS
St. Maries	Benewah 160090010 +47.316667/ -116.570280		Continuous	Population Exposure	TEOM	SPM – AQI
Sandpoint	Bonner 160170005 +48.267500/ -116.572222		Continuous	Population Exposure	TEOM	SPM – AQI

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Idaho Falls	Bonneville 160190013 +43.518267/ -112.020708	Idaho Falls	Continuous	Population Exposure	TEOM	SPM – AQI
Nampa	Canyon 160270004 +43.562401/ -116.563232	Boise City	1:3	Population Exposure	Primary Sequential FRM	SLAMS
Nampa	Canyon 160270004 +43.562401/ -116.563232	Boise City	Continuous	Population Exposure	TEOM	SPM – AQI
Franklin	Franklin 160410001 +42.013333/ -111.809167		1:3	Population Exposure	Sequential FRM	SLAMS
Coeur d'Alene	Kootenai 160550006 +47.682315/ -116.765530	Kootenai County	Continuous	Population Exposure	TEOM	SPM – AQI
Salmon	Lemhi 160590004 +45.170556/ -113.892222		1:6	Population Exposure	Sequential FRM	SLAMS
Salmon	Lemhi 160590004 +45.170556/ -113.892222		Continuous	Population Exposure	TEOM	SPM – AQI
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:1	Population Exposure	Primary Sequential FRM	SLAMS
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:12	Population Exposure	Precision Sequential FRM	SLAMS
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population Exposure	TEOM	SPM
Twin Falls	Twin Falls 160830010 +42.564097/ -114.446200		Continuous	Population Exposure	TEOM	SPM
Lewiston	Nez Perce 160690012 +46.404722/ -116.968889		Continuous	Population Exposure	TEOM	SPM

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Type	Monitor Designation
Grangeville	Idaho 160490002 +45.931389/ -116.115278		Continuous	Population Exposure	TEOM	SPM
Moscow	Latah 160570005 +46.721932/ -116.959180		Continuous	Population Exposure	TEOM	SPM
McCall	Valley 16-085-0001 +44.899318 -116.093914		Continuous	Population Exposure	TEOM	SPM

Table 12. DEQ PM_{2.5} Monitoring Stations / Addresses and Method Codes

Site	Address	Method Codes
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	701 & 703 - R&P TEOM, Gravimetric Analysis, PM2.5 SCC w/ no correction factor
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	117 - R&P Model 2000 PM2.5 Manual Sampler w/WINS, Gravimetric
Meridian St. Luke's	Eagle Rd & I-84 Meridian, ID 83642	810 - MetOne SASS
Boise	3500 Cabarton Lane, Boise, ID 83704	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Boise	3500 Cabarton Lane, Boise, ID 83704	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Pocatello	Corner Garrett & Gould, Pocatello, ID 83204	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
St. Maries	Forest Service Bldg St. Maries, ID 83666	715 & 716 - TEOM Gravimetric Analysis PM2.5 VSCC w/ no correction factor
St. Maries	Forest Service Bldg St. Maries, ID 83666	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Sandpoint	1601 Ontario St. Sandpoint ,ID 83864	715 & 716 - TEOM Gravimetric Analysis PM2.5 VSCC w/ no correction factor
Idaho Falls	N Holmes & Pop Kroll Idaho Falls, ID 83401	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Nampa	Northwest Nazarene University	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Nampa	Northwest Nazarene University	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Franklin		118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric

Site	Address	Method Codes
Coeur d'Alene	930 N. 15 th Coeur d'Alene, ID 83814	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Salmon	N Charles St. Salmon, ID 83467	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Salmon	N Charles St. Salmon, ID 83467	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Pinehurst	106 Church St. Pinehurst, ID 83850	761 - R&P FDMS - Gravimetric Analysis, PM2.5 VSCC (Prior to May 30, 2007: 717 & 718 - R&P TEOM - gravimetric Analysis, PM2.5 VSCC w/ correction factor)
Pinehurst	106 Church St. Pinehurst, ID 83850	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Pinehurst	106 Church St. Pinehurst, ID 83850	118 - R&P Model 2025 PM2.5 Sequential Sampler w/ WINS, Gravimetric
Twin Falls	1913 Addison Ave E, Twin Falls, ID 83301	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Lewiston	1200 29 th St Lewiston, ID 83501	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Grangeville	USFS Compound Grangeville, ID 83530	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
Moscow	1025 Plant Sciences Rd Moscow, ID 83843	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor
McCall	U.S Forest Service Office	702 & 704 - R&P TEOM Gravimetric Analysis PM2.5 SCC w/ correction factor

I.G Meteorological Network

DEQ currently operates 13 ten-meter meteorological stations. Six sites are located in the northern Idaho cities of Pinehurst, Sandpoint, Moscow, Lewiston, Grangeville, and Coeur d'Alene; two sites run in Boise; and there is one each in Salmon, Pocatello, Wendell, Meridian, and Caldwell. Meteorological data is important for DEQ air quality forecasting as well as airshed and dispersion modeling programs. The following parameters are gathered to support of both of those objectives: wind speed, wind direction, solar radiation, relative humidity, temperature and barometric pressure. This year, correction of power and/or telemetry problems will be taken care of at a few tower locations.

I.H National Community-oriented (NCORE) Multi-pollutant Site

DEQ will continue development of one NCORE station in Idaho, to be located in the Boise City MSA at the St. Luke's Hospital site in Meridian. NCORE is a national network of multi-pollutant sites that will measure not only criteria pollutants, but also "trace gas" compounds that are precursors for ozone and PM_{2.5}. The NCORE sites are required to be in full operation by 2011.

DEQ has purchased the trace gas monitoring equipment and will put them in operation during summer 2008. Compounds to be added include trace levels of carbon monoxide, sulfur dioxide and reactive oxides of nitrogen. The NCORE station data will be used to evaluate the regional air quality models used in developing emission strategies and to track trends in air pollution control measure impact on improving air quality in the Treasure Valley. See the attached NCORE Readiness Self-Assessment Worksheet for more information.

In conjunction with Clean Air Awareness Week, a public "open house" was held at the St. Luke's Hospital NCORE site. Anyone interested in the site and the data generated there was invited to tour the location and ask questions. Those in attendance included city government officials, hospital representatives, university professors, environmental groups, local media, and DEQ staff members. Should this or other events like it lead to further discussion with health researchers and data stakeholders, this will be conveyed in the 2009 Annual Network Plan.

II. DEQ 2007 AIR MONITORING - POLLUTANT DESCRIPTIONS

II.A PM₁₀

Monitoring Requirements - Idaho PM₁₀ Network

Five PM₁₀ monitoring sites are currently in operation (Table 1). These monitors support local SIPs and/or PM₁₀ maintenance plans and will continue operation through 2008. PM₁₀ monitoring site locations are selected to represent average population exposure to spatially representative PM concentrations in the middle, neighborhood, and urban scales.

DEQ terminated the PM₁₀ Hi-vol at the Boise monitoring location, with EPA approval. The PM₁₀ TEOM at the G&G site in Pocatello was also terminated due to major equipment malfunction. This monitor will be re-instated during 2008 upon replacement with a new TEOM.

Sources

Major sources of PM₁₀ include agricultural tilling, motor vehicles, paved and unpaved road dust, wood stoves, outdoor and agricultural burning, and wildfires.

II.B CO

Monitoring Requirements - Idaho CO Network

In December 2002, the Northern Ada County CO Limited Maintenance Plan was approved by EPA, which reclassified the area as attainment for the CO NAAQS. No exceedances of the CO NAAQS have occurred since 1991. Idaho runs one CO monitor at a middle scale (several city blocks in size ranging to several hundred meters to 0.5 km in representation). This Boise CO monitor was sited based on the maximum concentration identified through a saturation study performed in 1996. The demographics of the Treasure Valley have changed, but the urban canyon setting chosen for this site remains primarily the same.

Termination of this monitor could be justified by the data; however, the Maintenance Plan will have to be modified and approved by EPA to achieve this change.

DEQ is not planning further adjustment to this portion of the network.

Sources

Major sources of CO include on-road and nonroad vehicles, and outdoor burning.

II.C SO₂

Monitoring Requirements - Idaho SO₂ Network

The Pocatello STP SLAMS monitor is a maximum concentration site used to assess impacts of local industrial emissions. The 5-Mile Soda Springs SPM monitor is also a maximum

concentration site for assessing industrial impacts from a nearby source. These two monitors operate in the neighborhood and middle scales, respectively. Both SO₂ monitoring locations in southeastern Idaho were identified as fence-line “hot spots” from conventional dispersion model applications.

DEQ is not planning further review of this portion of the network.

Sources

Major sources include large industrial facilities, indoor oil burning, and off-road vehicles and equipment.

II.D O₃

Monitoring Requirements - Idaho O₃ Network

DEQ currently operates three ozone monitors in the Treasure Valley. The original monitoring sites were chosen in accordance to EPA guidance to represent the maximum population density and the maximum-concentration downwind of the urban center. An O₃ saturation study conducted in 2004 indicated a need to relocate the maximum concentration downwind site, as maximum concentrations were identified in the Boise city limits. To better capture the downwind concentrations inside the Treasure Valley, the East of Boise location in Elmore County (Simco Road) was moved to the ITD location on State Street.

With the continued growth in the Treasure Valley airshed, DEQ intends to monitor O₃ indefinitely at the neighborhood to urban scale. DEQ will evaluate the new O₃ monitoring locations and assess whether daily maximum 8-hour ozone concentrations are being captured at ITD and whether the St. Luke's data represents average population exposure. If not, DEQ will propose new locations for these monitors.

Currently, the fourth DEQ O₃ analyzer operates at the Lancaster site located in the panhandle region of northern Idaho. This site is approximately 30 miles east of the city of Spokane and EPA AIRNOW ozone maps frequently show Idaho's panhandle in the “moderate” air quality category based on O₃ monitoring data collected in Spokane. The Lancaster site runs at the urban scale of 4 to 50 km.

DEQ intends to add a fourth Treasure Valley O₃ monitor at the Purple Sage site in Caldwell as an upwind transport site.

Sources

Ozone is not typically emitted directly from a pollution source. It forms in the lower atmosphere through reaction of nitrogen oxides (NO_x) and certain volatile organic compounds (VOCs) in the presence of warm temperatures and ample sunshine. NO_x sources include on-road and nonroad vehicles and large industrial facilities. VOC sources include asphalt paving, on-road and nonroad vehicles, wood burning, and solvent use. These precursor pollutants (NO_x and VOCs) might travel great distances before forming O₃.

II.E NO₂

Monitoring Requirements - Idaho NO₂ Network

DEQ will initiate monitoring for nitrogen oxides (nitrogen oxide, nitrogen dioxide and total NO_x) this summer through the end of the ozone season (May through September) at the ITD and Purple sage sites. NO₂ is currently monitored at the St. Luke's NCORE site on a year-round schedule and during O₃ season (May through September) at the Lancaster site. The NO_x data (that is nitric oxides as well as NO₂) gathered in the DEQ network are intended to support the ozone monitoring objectives.

Sources

NO_x sources include on-road and nonroad vehicles and large industrial facilities.

II.F PM_{2.5}

Monitoring Requirements - Idaho PM_{2.5} Network

A PM_{2.5} monitoring network review and assessment are conducted separately each year as part of the 103-grant application process. DEQ used this review and analyses for our recent PM_{2.5} nonattainment area recommendations and crop residue disposal SIP revision to determine monitoring priorities. During the latter half of 2008, DEQ intends to use provided state funds to replace aging monitors in the PM_{2.5} network, to add monitors in locations of sparse sampler coverage impacted by field burning and wildfire, to replace data acquisition software and enhance the real-time air quality data posted on the DEQ web site.

For 2008, DEQ has retained a “core network” of six PM_{2.5} FRMs monitoring stations in five airsheds due to the potential exceedance of the newly established 24-hour PM_{2.5} NAAQS. Pinehurst, St. Maries, Franklin, Boise/Nampa, and Salmon comprise this network. Of these five airsheds, Pinehurst (Shoshone County) and Franklin (Franklin County) are likely to be designated nonattainment areas for the 24-hour PM_{2.5} NAAQS.

Sources

PM_{2.5} sources include wood and agricultural burning, wildfires, on-road and nonroad vehicles, and secondary formation through chemical reaction in the atmosphere.

II.G Meteorological

DEQ operates 13 ten-meter meteorological stations. Meteorological measurements are used to support air quality index forecasting and air quality modeling analyses. DEQ is adjusting and standardizing the meteorological parameters collected to ensure the required inputs for regulatory (e.g. AERMOD) and airshed (e.g. Calpuff) models are provided.

III. SUMMARY

Table 13 contains a complete list of DEQ 103 and 105 grant-funded monitoring stations proposed for 2008-2009. Figure 1 shows a map of DEQ's 2008 ambient air monitoring network.

The St. Luke's site in Meridian is being developed as DEQ's NCORE monitoring site.

This network review/plan does not provide for any significant modifications for the DEQ ambient air-monitoring network during 2008 and 2009. The DEQ PM monitoring network is primarily composed of middle/neighborhood/urban-scale sites, to assess population exposure to PM₁₀ and PM_{2.5}, and to support AQI forecasting and smoke management programs.

It is the goal of EPA for states, locals, and tribes to reconcile their ambient air quality monitoring networks to the objectives of the National Air Monitoring Strategy (NAMS). The NAMS will likely be retained as the guiding document for DEQ's ambient air monitoring network and the National Ambient Air Monitoring System.

The monitoring objectives of the NAMS are:

1. Provide timely reporting of data to the public
2. Evaluate compliance with NAAQS
3. Support long-term health studies
4. Support scientific studies
5. Support development of emission control strategies.

PM_{2.5} chemical speciation, urban air toxics (HAPs) monitoring, pollutant source apportionment, emissions inventory, spatial analysis, and airshed models will provide tools for a more refined review and assessment of the ambient air monitoring network. EPA is now requiring that air monitoring agencies conduct a more detailed assessment of their networks every five years using these tools. The first of these five-year assessments is due July 1, 2010. DEQ's ultimate goal is to achieve a "mature" air monitoring network that achieves these objectives.

Table 13. 2008 Idaho DEQ Ambient Air Monitoring Network

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Sandpoint	Bonner 160170004 +48.270633/ -116.567724		Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Nampa	Canyon 160270002 +43.580310/ -116.562676	Boise City	Continuous	Population exposure	TEOM (SPM)	PM ₁₀

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Boise	Ada 160010009 +43.618889/ -116.213611	Boise City	Continuous	Population exposure	TEOM (SLAMS)	PM ₁₀
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:3	Population exposure	Primary Hi-vol (SLAMS)	PM ₁₀
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	1:12	Precision/Quality Assurance	Collocated Hi-vol (SLAMS)	PM ₁₀
Eastman	Ada 160010014 +43.616379/ -116.203817	Boise City	Continuous	Population Exposure	SLAMS	CO
STP	Bannock 160050004 +42.916389/ -112.515833	UAR Pocatello	Continuous	Highest Concentration	SLAMS	SO ₂
5-Mile Soda Springs	Caribou 160290031 +42.695278/ -111.593889		Continuous	Source Oriented	SPM	SO ₂
Boise - Whitney	Ada 160010030 +43.589464/ -116.223462	Boise City	Continuous	Population Exposure	SLAMS	O ₃
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Continuous	Population Exposure	SPM	O ₃
Meridian - St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	Proposed NCORE	O ₃
Boise - ITD	Ada 160010019 +43.634585/ -116.233919	Boise City	Continuous	Population Exposure	SPM	O ₃
Lancaster	Kootenai 160550003 +47.788908/ -116.804539		Continuous	Population Exposure	SPM	NO ₂
Boise - ITD	Ada 160010019 +43.634585/ -116.233919	Boise City	Continuous	Population Exposure	SPM - O ₃	NO ₂

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Meridian - St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	Proposed NCORE	NO ₂
Meridian - St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:3	Population Exposure	Proposed NCORE	PM _{2.5}
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	1:6	Population Exposure	Proposed NCORE	PM _{2.5}
Meridian St. Luke's	Ada 160010010 +43.607568/ -116.348434	Boise City	Continuous	Population Exposure	Proposed NCORE	PM _{2.5}
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	1:3	Population Exposure	SLAMS	PM _{2.5}
Boise	Ada 160010011 +43.636111/ -116.270278	Boise City	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Pocatello	Bannock 160050015 +42.876725/ -112.460347	Pocatello	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
St. Maries	Benewah 160090010 +47.316667/ -116.570280		1:3	Population Exposure	SPM - Correlation	PM _{2.5}
St. Maries	Benewah 160090010 +47.316667/ -116.570280		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Sandpoint	Bonner 160170005 +48.267500/ -116.572222		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Idaho Falls	Bonneville 160190013 +43.518267/ -112.020708	Idaho Falls	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Nampa	Canyon 160270004 +43.562401/ -116.563232	Boise City	1:3	Population Exposure	SLAMS	PM _{2.5}
Nampa	Canyon 160270004 +43.562401/ -116.563232	Boise City	Continuous	Population Exposure	SPM - AQI	PM _{2.5}

Site	County AIRS ID Lat/Lon	UAR/ MSA/ CMSA	Sample Frequency	Monitor Objective	Monitor Designation	Pollutant
Franklin	Franklin 160410001 +42.013333/ -111.809167		1:3	Population Exposure	SLAMS	PM _{2.5}
Coeur d'Alene	Kootenai 160550006 +47.682315/ -116.765530	Kootenai County	Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Salmon	Lemhi 160590004 +45.170556 -113.892222		1:6	Population Exposure	SLAMS	PM _{2.5}
Salmon	Lemhi 160590004 +45.170556/ -113.892222		Continuous	Population Exposure	SPM - AQI	PM _{2.5}
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:1	Population Exposure	SLAMS	PM _{2.5}
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		1:12	Population Exposure	SLAMS	PM _{2.5}
Pinehurst	Shoshone 160790017 +47.536389/ -116.236667		Continuous	Population Exposure	SPM	PM _{2.5}
Twin Falls	Twin Falls 160830010 +42.564097/ -114.446200		Continuous	Population Exposure	SPM	PM _{2.5}
Lewiston	Nez Perce 160690012 +46.404722/ -116.968889		Continuous	Population Exposure	SPM	PM _{2.5}
Grangeville	Idaho 160490002 +45.931389/ -116.115278		Continuous	Population Exposure	SPM	PM _{2.5}
Moscow	Latah 160570005 +46.721932/ -116.959180		Continuous	Population Exposure	SPM	PM _{2.5}
McCall	Valley 160850001 +44.899318 -116.093914		Continuous	Population Exposure	SPM	PM _{2.5}

Figure 1. 2008 Ambient Air Monitoring Network

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SFY 2008 Air Monitoring Network

